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Customer Number

Patent
Case No.: 57013US002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: CROSS, ELISA M.
Application No.: 10/017268 Confirmation No.: 6070
Filed: December 14, 2001
Title: TOUCH PANEL SPACER DOTS AND METHODS OF MAKING

BRIEF ON APPEAL

Mail Stop: Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Brief is presented in support of the Appeal filed March 15, 2006, from the final rejection of Claims 1-18 of the above-identified application, as set forth in the Office Action mailed December 15, 2005.

- ☐ Please charge the fee provided in 37 CFR § 41.20(b)(2) to Deposit Account No. 13-3723. One copy of this sheet marked duplicate is also enclosed.
- ☐ Any required fee will be paid at the time of EFS-Web submission.
- ☒ If necessary, charge any required fee, or credit any overpayment to Deposit Account No. 13-3723.

A Notice of Appeal in this application was mailed on March 15, 2006, and was received in the USPTO on March 15, 2006.

REAL PARTY IN INTEREST

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal for the above-referenced patent application.

STATUS OF CLAIMS

Claims 1-18 are pending and are the subject of this Appeal (Appendix 1, Claims). Claim 1 is the sole independent claim.

Claims 1-6 and 15-18 have been finally rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,627,918 (Getz) in view of U.S. Patent No. 6,245,469 (Shiba).

Claims 7-14 have been finally rejected under 35 U.S.C. §103(a) as being unpatentable over Getz in view of Shiba and in further view of U.S. Application No. 09/756312 (Berman).

STATUS OF AMENDMENTS

All amendments presented in this application have been claim cancellations, and have been entered. The appealed claims as set forth in Appendix 1 are as originally filed.

SUMMARY OF CLAIMED SUBJECT MATTER

Appellants claims recite a method for making a touch activated user input device, including the steps of: providing a first substrate (210 in Fig. 2 below) comprising a first conductive coating (220 in Fig. 2 below); ink jet printing (see nozzle 240 printing a droplet 250 in Fig. 2 below) a plurality of dots (230 in Fig. 2 below) on the first conductive coating;

hardening the dots to form spacers adhered to the first substrate; and placing a second substrate comprising a second conductive coating over the first substrate such that the spacers maintain a distance between the first and second substrates to prevent detection of a touch location when no external force is applied and allow detection of a localized touch location when a sufficient localized external force is applied between the first and second substrates (see generally Fig. 1 below).

Illustration 1—FIGURES 1 and 2 of Appellants' Specification

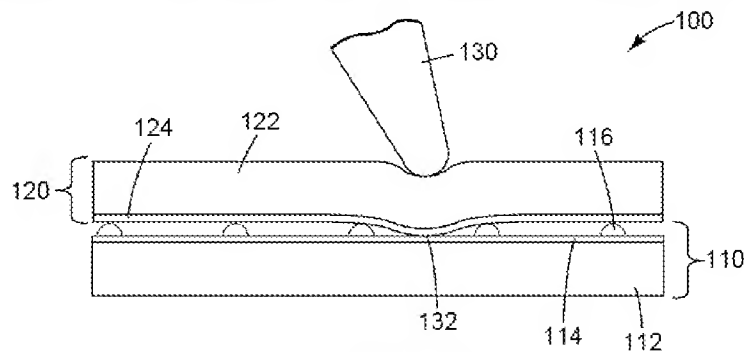


Fig. 1

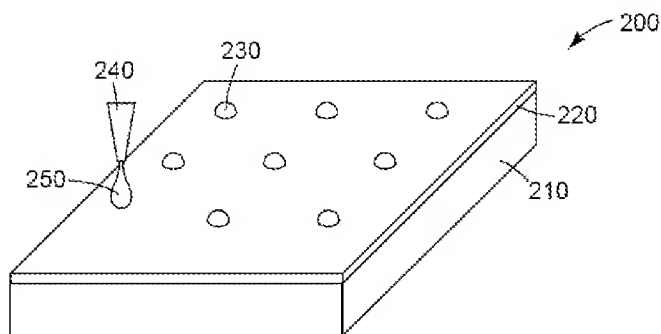


Fig. 2

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-6 and 15-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Getz in view of Shiba.

Claims 7-14 have been finally rejected under 35 U.S.C. §103(a) as being unpatentable over Getz in view of Shiba and in further view of Berman.

The issue presented for review:

1. whether claims 1-6 and 15-18 are patentable over Getz in view of Shiba; and
2. whether claims 7-14 are patentable over Getz in view of Shiba and in further view of Berman.

The claims are contained in Appendix I.

ARGUMENT

1. Claims 1-6 and 15-18 are patentable over Getz in view of Shiba

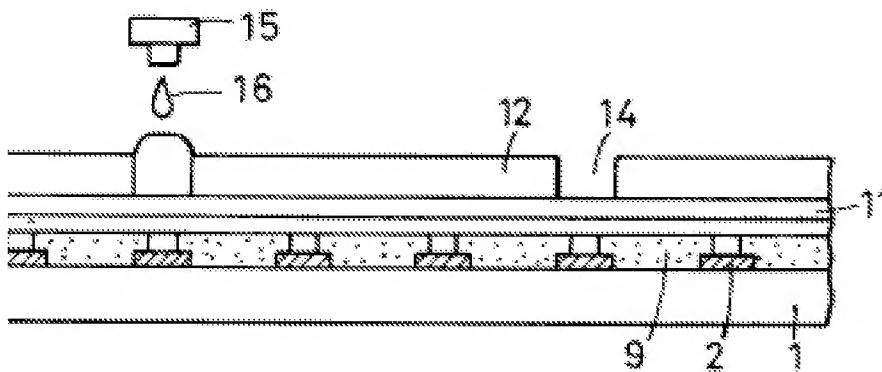
Resistive touch screens require spacer dots to be placed in the active area to ensure separation

between upper and lower conductive sheets in the absence of a touch input, and to ensure that only valid touches are registered (i.e., light touches to the surface of the device that are not intended to be a touch input are not sufficient to bring the separated conductive sheets into contact). Conventionally, spacer dots have been provided by methods such as screen printing that allow the needed spacer dot size, aspect ratio and spacing, as well as adherence, to be provided. Getz discloses a resistive touch screen where the spacer dots are made by conventional screen printing methods, and does not disclose any other printing techniques.

In contrast, Appellants' claims recite ink jet printing and hardening a plurality of dots on a conductive coating to make spacer dots for a touch screen. While ink jet printing as a general technique has been used for many applications, Appellants were the first to apply it to making spacer dots for resistive touch screens. It is worth noting that printing techniques are not automatically substitutable for one another, and this holds true for the case of screen printing and ink jet printing. For example, materials developed for screen printing are typically not suitable

for ink jetting without substantial modification. Depending on the particular application, such modifications may render the materials unsuitable for their intended purpose.

As acknowledged by the Examiner, Getz does not disclose ink jet printing of the disclosed spacer dots. Thus, the Examiner seeks to combine Getz with Shiba, which discloses making spacers using ink jet techniques, even though the spacers of Shiba are for liquid crystal display color filter elements and not for touch panels. As shown in the figure below, Shiba forms spacers by injecting a material (16) from an ink jet head (15) into through-holes (14) formed in a mask (12). In a later step, the mask is removed to leave an array of spacers that have a well-controlled and uniform height in order to precisely control a gap. The gap controlled by the spacers of Shiba is fixed, meaning that the spacers do not undergo the repeated pressing and rubbing experienced over the lifetime of a resistive touch screen spacer dot.



To make a prima facie case of obviousness using multiple references, both a motivation to combine the references and reasonable expectation of success must exist. In this case, there is no motivation to combine Getz and Shiba, nor is there reasonable expectation of success. Shiba's disclosure of using ink jet techniques to make liquid crystal display spacers would not motivate one of skill in the art to seek to ink jet the materials of Getz in order to form spacer dots for resistive touch screens. As Appellants discuss throughout their Specification, touch panel spacer dots are subjected to repeated applied forces and rubs, conditions that are not experienced by the display element spacers disclosed by Shiba. Touch panel spacer dots are formed on, and must robustly adhere to, the touch-functional conductive layers of the touch panel, materials onto which the spacers of Shiba are not formed. Further, Shiba relies on the use of through-holes into which the ink jet material is injected so that the size of the spacers can be controlled. Such provisions are generally not available or desirable when patterning spacer dots

for touch panel devices. As such, there is nothing in Shiba that would suggest to one of skill in the art that any of the materials or techniques for making color filter spacers would be applicable to the making of touch panel spacer dots. In addition, there is no teaching or suggestion that the spacer dot materials disclosed by Getz would be suitable, or modifiable to be suitable, for ink jet printing. It is Appellants view that hindsight has been used impermissibly in making the present rejection, thereby ignoring the significant advancements offered by Appellants in the present invention of ink jet printing touch panel spacer dots.

For these reasons, Appellants submit that there is no motivation to make the proposed combination of references, and that there would be no reasonable expectation of a successful outcome even if such a combination were made. Therefore, Appellants submit that a prima facie case of obviousness had not been made.

2. Claims 7-14 are patentable over Getz in view of Shiba and in further view of Berman

The Examiner contends that Getz and Shiba disclose all the elements of claims 7-14 except the use of a nanocomposite gel as the ink jet printed material. In that respect, Berman is cited for its disclosure of nanocomposite gels. Appellants contend that the underlying combination of Getz with Shiba is fatally deficient for the reasons noted above, and that Berman offers nothing to cure those deficiencies. As such, a prima facie case of obviousness has not been made.

CONCLUSION

For the foregoing reasons Appellant's claims 1-18 are patentable over the applied references. Appellants earnestly solicit a favorable decision from the Board on each of the issues presented.

Respectfully submitted,

May 15, 2006

Date

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CLAIMS APPENDIX

1. (Appealed) A method for making a touch activated user input device comprising:
providing a first substrate comprising a first conductive coating;
ink jet printing a plurality of dots on the first conductive coating;
hardening the dots to form spacers adhered to the first substrate; and
placing a second substrate comprising a second conductive coating over the first substrate such that the spacers maintain a distance between the first and second substrates to prevent detection of a touch location when no external force is applied and allow detection of a localized touch location when a sufficient localized external force is applied between the first and second substrates.
2. (Appealed) The method of claim 1, wherein the dots comprise a nanocomposite comprising surface-modified inorganic nanoparticles.
3. (Appealed) The method of claim 2, wherein the surface-modified inorganic nanoparticles include silica nanoparticles.
4. (Appealed) The method of claim 2, wherein the nanoparticles are present in an amount of about 5% or more by weight of the nanocomposite.
5. (Appealed) The method of claim 2, wherein the nanoparticles are present in an amount of about 10% to 40% by weight of the nanocomposite.
6. (Appealed) The method of claim 2, wherein the nanoparticles have an average diameter in a range of about 10 to 30 nm.
7. (Appealed) The method of claim 2, wherein the nanocomposite further comprises hexanediol diacrylate.
8. (Appealed) The method of claim 1, wherein the step of ink jet printing a plurality of dots comprises ink jet printing a heated gel composition.

9. (Appealed) The method of claim 8, wherein the gel composition comprises a nanocomposite gel.

10. (Appealed) The method of claim 9, wherein the nanocomposite gel composition comprises surface-modified silica nanoparticles dispersed in an energy curable fluid vehicle.

11. (Appealed) The method of claim 10, wherein the energy curable fluid vehicle comprises hexanediol diacrylate.

12. (Appealed) The method of claim 10, wherein the silica nanoparticles are present in an amount of about 5% or more by weight of the nanocomposite gel.

13. (Appealed) The method of claim 10, wherein the silica nanoparticles are present in an amount of about 10% to 40% by weight of the nanocomposite gel.

14. (Appealed) The method of claim 10, wherein the silica nanoparticles have an average diameter of about 10 to 30 nm.

15. (Appealed) The method of claim 1, wherein the first and second conductive coatings each comprise a transparent conductive coating.

16. (Appealed) The method of claim 1, wherein the spacer dots have heights of about 2 microns or more and have height to diameter aspect ratios of about 1:10 or more.

17. (Appealed) The method of claim 1, wherein the step of ink jet printing comprises ink jet printing a material onto a pre-existing dot.

18. (Appealed) The method of claim 1, further comprising associating the touch activated user input device with an electronic display.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.